

Remarks

The non-final Office Action dated February 24, 2009 listed the following new grounds of rejection: claims 6-14 and 17-23 stand rejected under 35 U.S.C. § 112(2); claims 6-7, 9-14, 17 and 20-24 stand rejected under U.S.C. § 103(a) over Yamamoto (U.S. Patent Pub. 2003/0049919) in view of Tao (U.S. Patent No. 6,399,515); and claims 8 and 18-19 stand rejected under U.S.C. § 103(a) over the '919 and '515 references in view of Lee (U.S. Patent No. 6,172,399). Applicant traverses all of the rejections and, unless explicitly stated by the Applicant, does not acquiesce to any objection, rejection or averment made in the Office Action.

Applicant respectfully traverses the § 103(a) rejections of claims 6-14 and 17-24 (each of which is based on the '919 reference) because the '919 reference does not correspond to aspects of the claimed invention directed to a first layer of activated crystalline gate material having a first side that is in contact with a gate insulating film and having a second side that is in contact with a second layer of gate material. Instead, the '919 reference teaches that there are two layers that separate oxide layer 6 (*i.e.*, the asserted gate insulating film) from polysilicon layer 73 (*i.e.*, the asserted first layer of activated crystalline gate material) and that barrier layer 74 separates polysilicon layer 73 from cap silicon layer 75 (*i.e.*, the asserted second layer of gate material) as is clearly evident from Figure 5 (reproduced below).

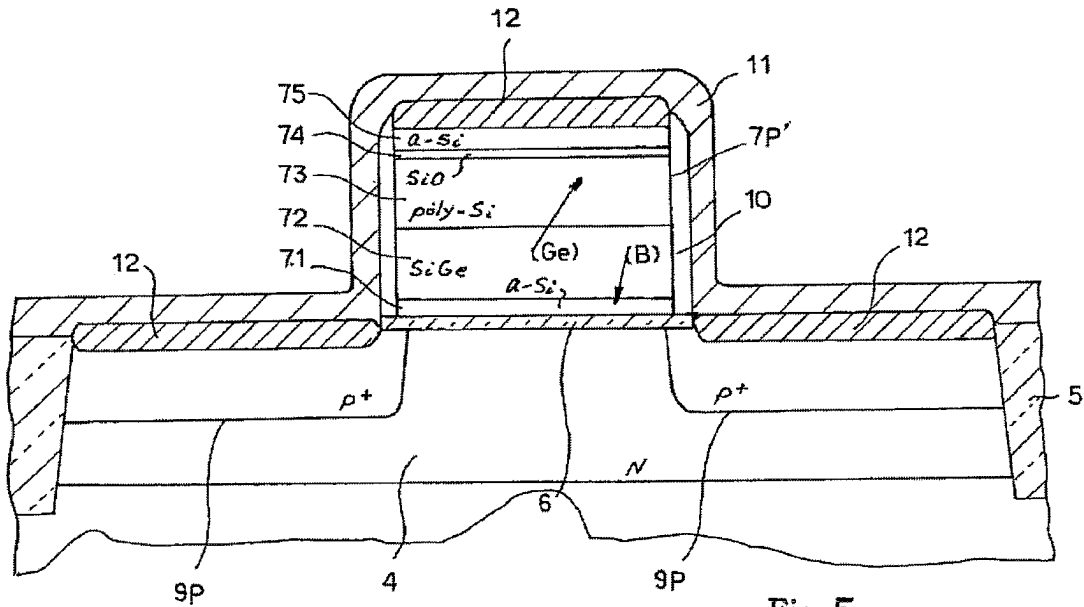


Fig. 5

Thus, the '919 reference does not correspond to the claimed invention. Accordingly, the § 103(a) rejections of claims 6-14 and 17-24 are improper and Applicant requests that they be withdrawn.

Applicant further traverses the § 103(a) rejections of claims 11-12, 20 and 24 because the Office Action fails to establish a *prima facie* case of obviousness with regard to the claimed grain sizes of Applicant's first and second layers of gate material. According to M.P.E.P. § 2144.05, the Examiner must first establish that the claimed ranges "overlap or lie inside ranges disclosed by the prior art" to establish a *prima facie* case of obviousness. In this instance, the '919 reference discloses a grain size on the order of 100 nm for the asserted second layer and between 20-50 nm for the asserted first layer (*see, e.g.*, paragraphs 0060 and 0079), whereas Applicant recites that the grain size of the second layer is less than about 40 nm and the grain size of the first layer is less than about 5 nm. Thus, the Office Action has failed to establish a *prima facie* case of obviousness since the '919 reference does not disclose ranges that overlap the claimed ranges. Therefore, the Office Action's further assertions regarding optimization of ranges through routine experimentation are inapplicable. Accordingly, the § 103(a)

rejections of claims 11-12, 20 and 24 are improper and Applicant requests that they be withdrawn.

Applicant further traverses the § 103(a) rejection of claims 8, 18 and 19 because the Office Action has improperly continued to assert that the '399 reference corresponds to aspects of these claims without responding to Applicant's previous arguments regarding the impropriety of the Office Action's assertion of correspondence as required. *See, e.g.*, M.P.E.P. § 707.07(f). Applicant previously explained in detail why the cited portions of the '399 reference are unrelated to aspects of claims 8, 18 and 19 directed to a doping implant in the activated gate material having a certain abruptness of a doping profile. In violation of M.P.E.P. § 707.07(f), the Office Action continues to assert correspondence to claims 8, 18 and 19 based on the same portion of the '399 reference (*i.e.*, Col. 1:54-58) without responding in any manner to Applicant's previous arguments. As previously discussed, the cited portions of the '399 reference discuss the abruptness of the junction dopant profile in a source/drain implant shallow junction (*see, e.g.*, Col. 1:41-58), instead of teaching that the abruptness of the doping profile in activated gate material is above a certain level as in the claimed invention. Moreover, the '399 reference does not teach or suggest that modifying layer 73 of the '919 reference to have an abruptness of a doping profile of about 10 nm or less would result in "better threshold voltage roll-off characteristics"; instead the cited portions of the '399 reference teach that a source/drain junction profile abruptness of less than 10 nm addresses poor threshold voltage roll-off characteristics. Applicant submits that the cited portions of the '399 reference concerning source/drain junctions are unrelated to the claimed invention, which includes aspects directed to the abruptness of the doping profile in a gate electrode. Accordingly, the § 103(a) rejection of claims 8, 18 and 19 is improper and Applicant request that it be withdrawn.

Applicant respectfully traverses the § 112(2) rejection of claims 6-12, 14 and 17-23 because the Office Action fails to present any basis for the rejection of these claims. The sole issue raised by the Office Action is in regard to "a gate insulator" recited in claim 13. Applicant submits that the Office Action's concern regarding the language of claim 13 does not present any basis for claims 6-12, 14 and 17-23 to be rejected under § 112(2). Thus, the § 112(2) rejection of claims 6-12, 14 and 17-23 is improper and must

be withdrawn. Regarding claim 13, Applicant has amended this claim to recite "the gate insulating film." As such, Applicant requests that the § 112(2) rejection of claim 13 be withdrawn.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is asked to contact the agent overseeing the application file, Peter Zawilski, of NXP Corporation at (408) 474-9063 (or the undersigned).

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